Owner's Manual

PROGRAMMABLE DIGITAL THERMOSTAT
53DFS250-SL

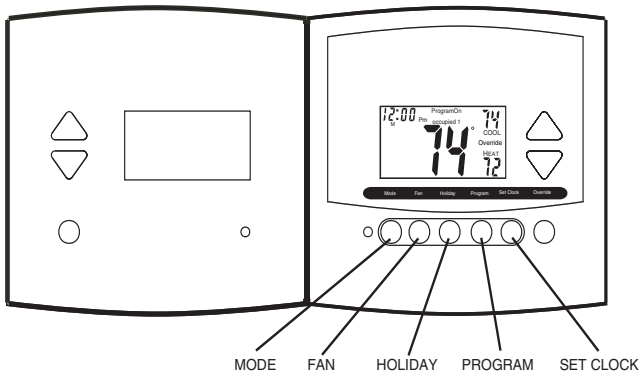
Table of Contents

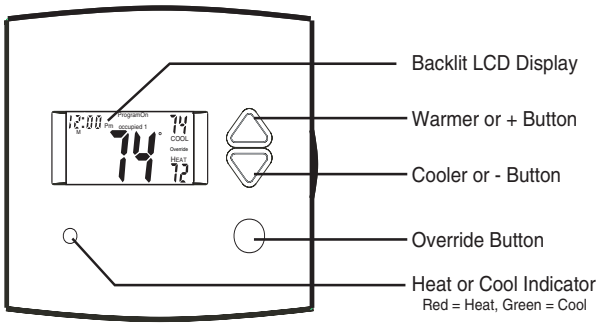
DISPLAY	2
QUICK START *Set the clock and go*	2
BASIC OPERATION	3
PROGRAMMING *Occupied and Unoccupied Periods*	3
ADVANCED SETUP	4
ABOUT ADVANCED FEATURES AND OPERATION	5
WARRANTY	7

- 7-Day Programmable
- 3 Occupied Modes, 1 Unoccupied Mode
- Auto Changeover
- Large, Easy To Read Display
- Thermoglow™ Backlight
- Remote Sensor Ready
- Dry Contact Equipped
- Energy Saving Smart Fan
- Fan Purge, IAQ Feature
- Meets California Title 24

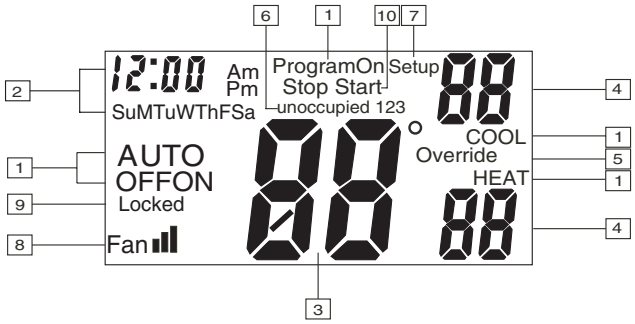
IMPORTANT: Follow *Installation Instructions* before proceeding.

⚠ **CAUTION:** SET THERMOSTAT TO MODE "OFF" PRIOR TO CHANGING SETTINGS IN SETUP OR RESTORING FACTORY DEFAULTS.





Display



1 Mode Indicators
Selects the operation mode of the equipment.
- **COOL** — indicates the air conditioning mode.
- **HEAT** — indicates the heat mode.
- **AUTO** — indicates the system will automatically changeover between the heat and cool modes as the temperature varies.
- **OFF** — indicates the entire system is turned off.
- **PROGRAM ON** — indicates the stored program is enabled to run. *See page 3.*

2 Clock with Day of the Week
Indicates the current time and day. This clock is also used to program the timer periods. *See this page.*

3 Room Temperature Display
Indicates the current room temperature.

4 Desired Set Temperature
Indicates desired room temperature(s). *See page 3.*

5 Override Indication
Indicates the current program is currently being overridden for up to 4 hours. *See pages 3 and 5*.

6 Occupied or Unoccupied Indication
Indicates the program number: Occupied 1, 2, 3, or Unoccupied. *See pages 3 and 4.*

7 Setup Indication
Indicates the thermostat is in the programming mode. *See page 4.*

8 Fan Operation Indication
Fan — indicates constant continuous fan operation.

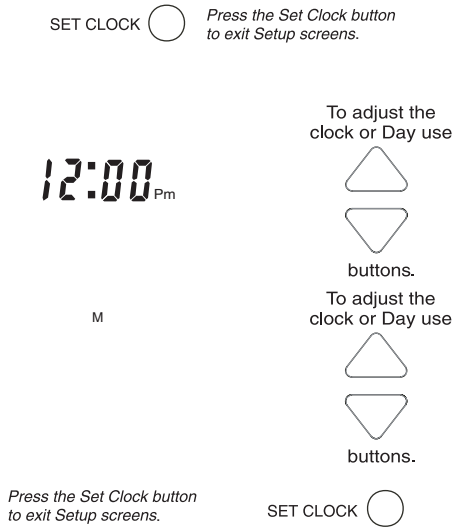
When **Fan On Icon** is not lit — indicates the fan will only operate when necessary to heat or to cool.

9 Locked Indication
Locked appears after the right combination of buttons are pressed, rendering the buttons inoperative. *See page 5.*

10 **Start/Stop** Indication
Start or Stop appears when programming timer functions. *See page 3.*

Quick Start *Set the Clock and Go*

During Setup and Programming:
*Pressing the Mode button selects different flashing items (represented in **black**).*
Pressing the Up and Down buttons will modify the flashing selection.


SET CLOCK
Press the Set Clock button to exit Setup screens.
To adjust the clock or Day use
12:00 Pm
buttons.
M
To adjust the clock or Day use
buttons.
Press the Set Clock button to exit Setup screens.
SET CLOCK

The thermostat is preprogrammed from the factory to operate equipment without the need for further programming. To optimize the installation of this thermostat follow the instructions in the Advanced Setup section.

NOTE: The thermostat is not preprogrammed from the factory to operate heat pump systems. To control these systems, follow the steps in the Advanced Setup section, page 4.

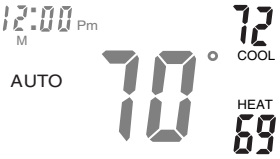
Basic Operation

Select Mode

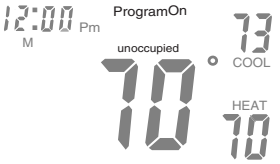
*The **HEAT** setting indicates the temperature the room has to reach before the unit will turn on to heat the room.*

*The **COOL** setting indicates the temperature the room has to reach before the unit will turn on to cool the room.*

***AUTO** will automatically select heat or cool based on room temperature demand.*



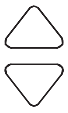
***Program On** will activate the stored timer operation. (Occupied and Unoccupied periods.)*



***OFF** indicates the system is turned off.*

Select Desired Temperature

In any mode, adjust the desired Set Point Temperature with



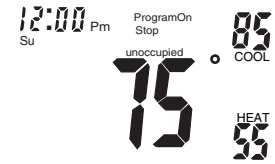
buttons.

Pressing the up/down buttons in Auto mode will adjust **both** the heat and cool set point temperatures simultaneously.

Pressing the up/down buttons in Heat **or** Cool modes will adjust only the heat **or** cool set point temperature.

Override

Press OVERRIDE



During programmed, unoccupied periods a press of the Override button will force the thermostat into Occupied 1 comfort settings, temporarily.

With each successive push of the Override button, the override timer will add 30 minutes, until the maximum of 4 hours is reached. Then the next press will zero out the override timer, returning to unoccupied if there are no further button presses.

When in Override, the Override icon and the Occupied 1 icon appear on the display.

The time of day clock alternates with the time remaining in override.

During Override, the set point temperatures are adjustable, provided the keypad is not locked.

Programming Occupied and Unoccupied Periods

PROGRAM Press the Program button to enter time period programming.

Select the maximum number of occupied periods to be used on any one day. Typically 1.
(1,2 or 3)

occupied 1

Adjust the cooling set point for occupied 1.
(35 to 99 F)

occupied 1 — 74 COOL

Adjust the heating set point for occupied 1.
(35 to 99 F)

occupied 1 — 74 COOL, HEAT 72

Adjust the cooling set point for unoccupied periods.
(35 to 99 F)

unoccupied — 85 COOL

Adjust the heating set point for unoccupied periods.
(35 to 99 F)

unoccupied — 85 COOL, HEAT 55

Select the day for Occupied 1.
(M-Su)

M — occupied 1

Adjust the start time for occupied 1.

7:00 Am M — Start occupied 1

Adjust the stop time for occupied 1.

6:00 Pm M — Stop occupied 1

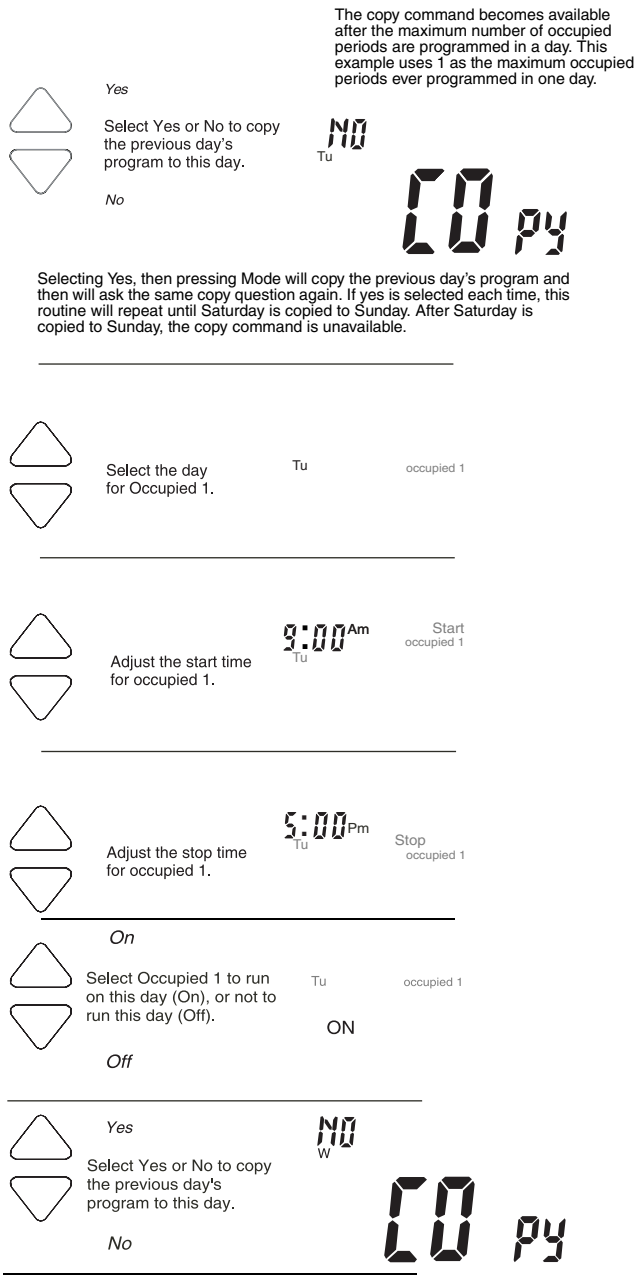
On

Select Occupied 1 to run on this day (On), or not to run this day (Off).

Off

M — occupied 1 — ON

Programming Occupied and Unoccupied Periods

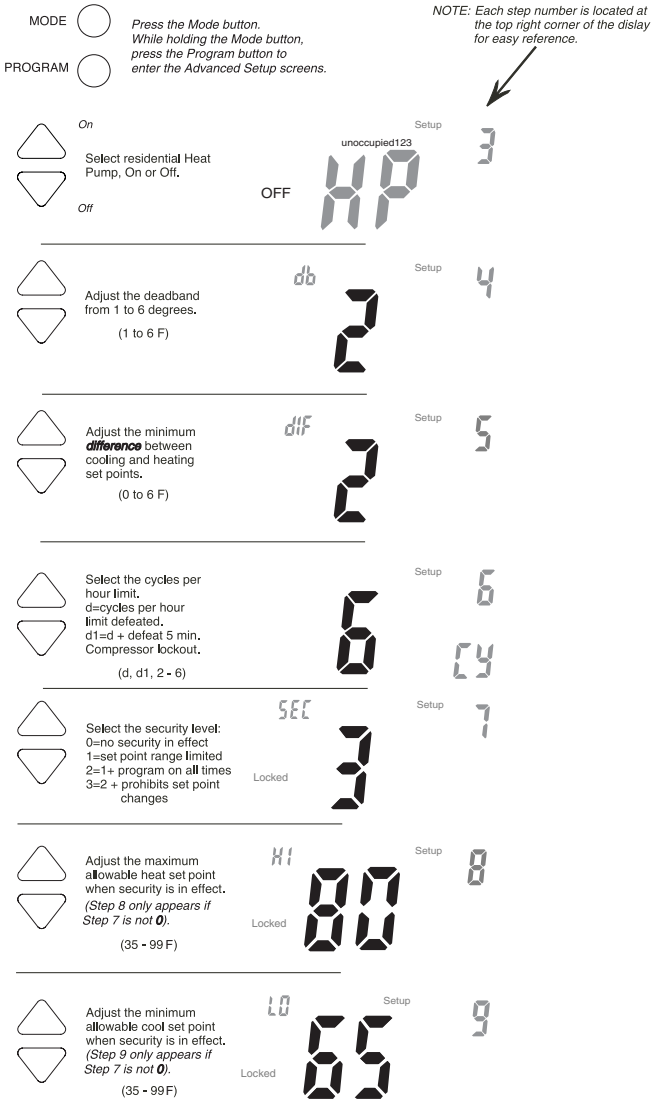

The copy command becomes available after the maximum number of occupied periods are programmed in a day. This example uses 1 as the maximum occupied periods ever programmed in one day.
Yes
Select Yes or No to copy the previous day's program to this day.
No
NO
Tu
CO PY
Selecting Yes, then pressing Mode will copy the previous day's program and then will ask the same copy question again. If yes is selected each time, this routine will repeat until Saturday is copied to Sunday. After Saturday is copied to Sunday, the copy command is unavailable.
Select the day for Occupied 1.
Tu
occupied 1
Adjust the start time for occupied 1.
9:00 Am
Tu
Start
occupied 1
Adjust the stop time for occupied 1.
5:00 Pm
Tu
Stop
occupied 1
On
Select Occupied 1 to run on this day (On), or not to run this day (Off).
Off
Tu
occupied 1
ON
Yes
Select Yes or No to copy the previous day's program to this day.
No
NO
W
CO PY
Selecting Yes, then pressing Mode will copy the previous day's program and then will ask the same copy question again. If yes is selected each time, this routine will repeat until Saturday is copied to Sunday. After Saturday is copied to Sunday, the copy command is unavailable.
If no is selected, as in previous steps, flashing prompts for input will appear for start and stop times for Occupied 1. If more than one occupied period was selected in Step 1 on page 3, then cool/heat set points, and start/stop times for additional occupied periods will be prompted.

PROGRAMMING NOTES

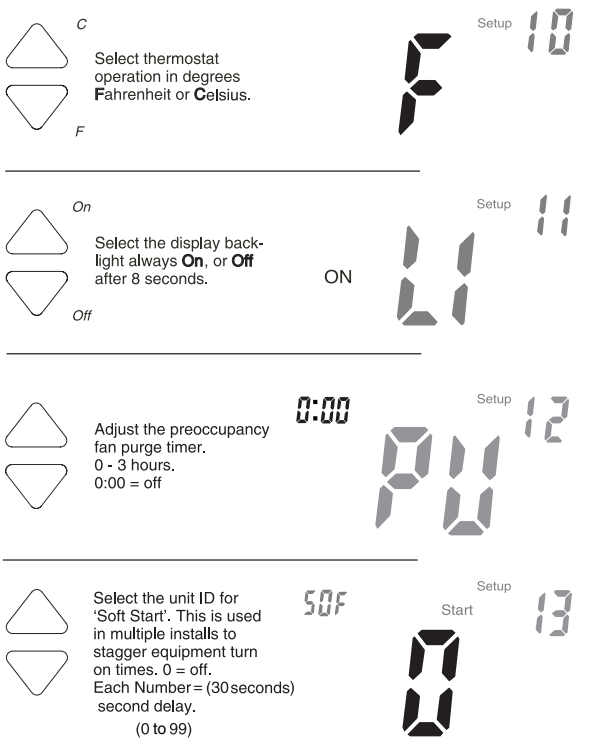
- If only 1 Occupied period is selected in step 1 on page 3, Occupied 2 and 3 programming steps are skipped. Further, if only 2 occupied periods are selected, Occupied 3 programming steps are skipped.
- Heat and Cool set points for Occupied 1 are the same for every day of the week. Heat and Cool set points for Occupied 2 and 3 can be adjusted differently for each day of the week, if desired.
- **If the start time is set later in the day than the stop time,** the program will run from the start time to midnight and from midnight to the stop time on the same day. *For example: 9:00pm start, 8:00am stop, on Monday. In this example the program will run from 12:00am Monday to 8:00am Monday and again from 9:00pm Monday to 12:00pm Monday.*
- The Unoccupied settings take effect at all times when: (**1**) the program is on **and (2**) the current time is outside a preset occupied period. For this reason start and stop times are not necessary for unoccupied.
- If the **same** start and stop times are programmed in for an occupied period, then it will run 24 hours.
- If one occupied period starts and stops within another occupied period the lower occupied number has priority. *For example: If Occupied 3 is programmed to be "on" 24 hours, and Occupied 2 is programmed to run that day, then Occupied 2 settings will take over from Occupied 3 between Occupied 2 start and stop times.*
- To program Occupied 2 and Occupied 3 modes repeat programming steps for Occupied 1.

Advanced Setup

Steps 1 and 2 were performed on page 2. Advanced Setup begins with Step 3.



Advanced Setup



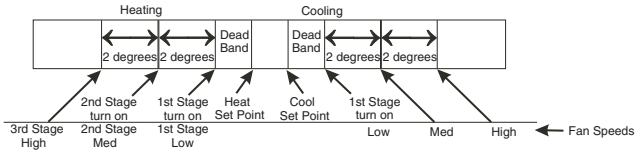
Press the Mode button. While holding the Mode, press the Program button leave the Setup screens. If no buttons are pressed, the display will leave the setup screens after 30 seconds.

Advanced Setup Table

STEP NO.	DESCRIPTION	RANGE	FACTORY DEFAULT
1	Time of day clock set	24 hour	12:00 Am
2	Day of the week	Su - Sa	Mo
3	Heat Pump	Off / On	Off
4	Deadband or Temperature swing	1 - 6 F	2 F
5	Forced minimum difference heat/ cool	0 - 6 F	2 F
6	Cycles per hour	d, d1, 2 - 6	6
7	Security Levels	0 - 3	0
8	Maximum allowable Heat set point	35 - 99 F	80 F
9	Minimum allowable Cool set point	35 - 99 F	65 F
10	Fahrenheit or Celsius	F / C	F
11	Thermoglow™ backlight	Off / On	On
12	Fan Purge timer	0:00 - 3:00 min.	0:00 min.
13	Soft Start	0 - 99	0

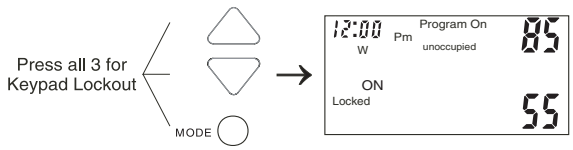
About Advanced Features and Operation

- CLOCK BACKUP — In the event of a power loss, the thermostat internal clock will continue to keep proper time for a minimum of 48 hours without external power or batteries.
- TWO-STAGE OPERATION — The Second Stage of heat (Heat pump models only) is turned on when (**1**) the first Stage has been on for a minimum of two minutes, **and** (**2**) the temperature spread from the set point is equal to or greater than: *the set point temperature plus the deadband, plus 2 degrees.*

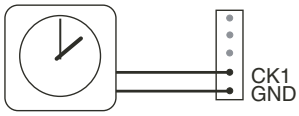


- MINIMUM HEAT/COOL SET POINT DIFFERENCE — The Heat and Cool set point temperature will not be allowed to come any closer to each other than the value set in Advanced Setup *Step 5, on page 4*. This minimum difference is enforced during Auto changeover and Program On operation.
- ENERGY SAVING SMART FAN — If Fan On is selected, the fan will run continuously at all times, except in Off, **and** will only run if there is a heating or cooling demand in Unoccupied periods.
- OVERRIDE — As explained on *page 3*, pressing the Override button during a programmed, Unoccupied period will force the thermostat into Occupied 1, temporarily, up to 4 hours. If the Override button is pressed during an Occupied period, the thermostat will be forced into Unoccupied and the occupied number *(1,2 or 3)*, it was forced out of will be turned off, only for that day.

  During Override periods the set point temperature may be adjusted, but they will not be remembered after Override ends.
- HEAT — First Stage = Heat Pump. Second Stage = Heat Pump and Electric Heat.
- FAN PURGE TIMER — When this feature is activated, the fan will turn on during Unoccupied at a preset amount of time prior to Occupied 1. This preoccupancy fan purge timer may be set as instructed on *this page, Step 12*, from 0 to 3 hours. 0 = this feature turned off.
- KEYPAD LOCK — To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold in the Mode button. While holding the Mode button in, press the Up and Down buttons in together. The **Locked** icon will appear on the display.

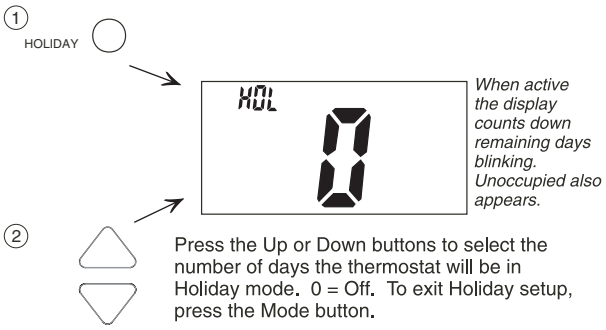


  To ***unlock*** the buttons, again press and hold the Mode button. While holding the Mode button in, press the Up and Down buttons in together. The **Locked** icon will disappear from the display.
- DRY CONTACT SWITCH — The terminals are 'normally open'. Closing or completing the circuit will cause the thermostat to enter Occupied 1. This feature allows an external device such as a Central Time Clock, Occupancy Sensor, or a Telephone activated device to force 1 or more thermostats into Occupied 1. For the Dry Contact to work the thermostat must be in **Program On**. *Set Occupied 1 to Off for all 7 days,* so the Contact closure will be in control. When the thermostat is forced into Occupied 1 via the Dry Contact closure, the icon **Occupied 1** will blink.



About Advanced Features and Operation

- HOLIDAY MODE — This feature forces the thermostat into Unoccupied for a preset duration, up to 99 days. The Holiday setup display is entered as follows:


1
HOLIDAY
HOL
0
When active the display counts down remaining days blinking. Unoccupied also appears.
2
Press the Up or Down buttons to select the number of days the thermostat will be in Holiday mode. 0 = Off. To exit Holiday setup, press the Mode button.

  The thermostat will enter the Holiday mode when the clock crosses midnight.

  During Holiday mode Unoccupied set points are enforced.

  The Override button is active during Holiday mode. It will override to Occupied 1 settings up to 4 hours then return to Holiday mode. The Dry Contact Switch is ignored.

  The thermostat will exit Holiday mode at midnight of the final programmed day. To terminate Holiday immediately, enter the Holiday setup screen and select 0.

- SOFT START — This feature is utilized in multiple thermostat installations controlled by the Dry Contact terminals. Assigning a unique Soft Start number to each thermostat will stagger the turn on times, even though the Dry Contact closes, for all the thermostats connected, at the same time. Each Soft Start number represents a multiple of 30 seconds from the Dry Contact closure. For example, no. 1 = turn on 30 seconds after Dry Contact closure, no. 2 = turn on 60 seconds after closure, no. 3 = turn on 90 seconds after closure, and so on. See *page 5, Step 13,* to configure the thermostat for Soft Start.

- DUAL SET POINT BEHAVIOR — The adjustable set point range is: 35 to 99 degrees in Fahrenheit and 7 to 35 degrees in Celsius. When in the modes Heat or Cool, this adjustable range is unhampered.

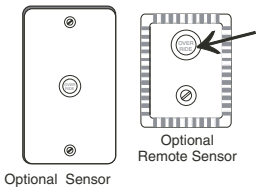
  When adjusting any Auto mode, including programming Occupied and Unoccupied periods, the thermostat will not allow the Heat set point to get closer to the Cool set point than the value programmed as the minimum difference in *Step 5, page 4.*

  When entering the Auto mode from Cool, the Heat and Cool set points will remain spread apart by the amount that they were adjusted, prior to entering Auto.

  For example: If the Cool set point was set to 80 while in the Cool mode and the Heat set point was adjusted to 70 while in the Heat mode, upon entering the Auto mode the Heat and Cool set points would be 80 and 70. **Both** set point temperatures would then move up and down together, (in this example spread by 10 degrees), by pressing the up or down buttons.

  To move the Heat and Cool set point temperatures closer together, enter the Cool or Heat mode by pressing the Mode button, then adjust the set point temperatures closer together. Heat is limited to how close it can come to Cool by *Step 5, page 4*.

- REMOTE SENSORS **(Optional Accessory)** — When connected to terminals RS+5, RS, and GND on the back of the thermostat, the thermostat will read the temperature from the Remote Sensor and ignore the temperature sensor inside the thermostat. The thermostat automatically recognizes when a Remote Sensor is connected. When reading the temperature from the remote, the degree icon above the room temperature blinks once a second.



  The Override button on the Remote Sensor works slightly different than the Override button on the front panel. Each press of the 'External' Override button adds 2 hours to the override timer. If the timer was already active, the first button press will round the runtime to either 2:00 or 4:00.

  Subsequent button presses will not wraparound as the Override button on the thermostat does, so the second or greater button press will set the runtime to 4:00. The Locked feature has no effect on the external Override button. The *wired* Remote Sensor is connected to the thermostat with **up to 500 ft of 20 ga. or 300 ft of 18 ga. thermostat wire**. *See the Remote Sensor instructions for further details.*

- FACTORY DEFAULTS — Before restoring factory defaults, set thermostat to OFF mode. If, for any reason it is desirable to return all stored settings back to the factory default settings, press the Mode button. While holding the Mode button in, press the Fan button for 5 seconds. All icons will appear. Press and hold in the Fan button until **Fd** appears. This resets all factory settings. **To calibrate room temperature,** press the Up and Down buttons at the same time twice. At this point use the Up and Down buttons to calibrate room temperature, if needed. Press the Mode button to return to normal operation.

Warranty

One-Year Warranty — This Product is warranted to be free from defects in material and workmanship. If it appears within one year from the date of original installation, whether or not actual use begins on that date, that the product does not meet this warranty, a new or remanufactured part, at the manufacturer's sole option, to replace any defective part will be provided without charge for the part itself; PROVIDED the defective part is returned to the distributor through a qualified servicing dealer.

THIS WARRANTY DOES NOT INCLUDE LABOR OR OTHER COSTS incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts. Such costs may be covered by a separate warranty provided by the installer.

THIS WARRANTY APPLIES ONLY TO PRODUCTS IN THEIR ORIGINAL INSTALLATION LOCATION AND BECOMES VOID UPON REINSTALLATION.

LIMITATIONS OF WARRANTIES — ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH THE LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MANY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER.

ALL WORK UNDER THE TERMS OF THIS WARRANTY SHALL BE PERFORMED DURING NORMAL WORKING HOURS. ALL REPLACEMENT PARTS, WHETHER NEW OR REMANUFACTURED, ASSUME AS THEIR WARRANTY PERIOD ONLY THE REMAINING TIME PERIOD OF THIS WARRANTY.

THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR:

1. Normal maintenance as outlined in the installation and servicing instructions or owner's manual including filter cleaning and/or replacement and lubrication.
2. Damage or repairs required as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation.
3. Failure to start due to voltage conditions, blown fuses, open circuit breakers or other damages due to the inadequacy or interruption of electrical service.
4. Damage as a result of floods, winds, fires, lightning, accidents, corrosive environments or other conditions beyond the control of the Manufacturer.
5. Parts not supplied or designated by the Manufacturer, or damages resulting from their use.
6. Manufacturer products installed outside the continental U.S.A., Alaska, Hawaii, and Canada.
7. Electricity or fuel costs or increases in electricity or fuel costs from any reason whatsoever including additional or unusual use of supplemental electric heat.
8. ANY SPECIAL INDIRECT OR CONSEQUENTIAL PROPERTY OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

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